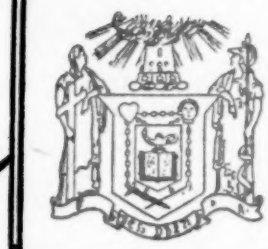
# THE PHI DELTA KAPPAN



Vol. VIII APRIL, 1926 No. 5

CREATIVE educators are today seeking to formulate new and more valid definitions of education not because they are captious critics with a passion for publicity, but because they are honest workmen who want to see the tool fitted to the task.

—*Glen Frank.*

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## Some Talks Heard by Chapters

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*Addresses marked by an asterisk are permanent Chapter addresses

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ALPHA-LAMBDA CHAPTER—Boston University
Jose Onate, Secretary, *School of Education, 675 Boylston Street, Boston University, Boston, Mass.

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VOL. VIII APRIL, 1926 No. 5

## *Foreword*

*The contributions for this issue of the Phi Delta Kappan consist of addresses delivered before various active chapters during the year. In order to secure this material the editor addressed a bulletin to the secretaries of all active chapters asking each to forward to the national office for publication the best address which the chapter had heard during the year.*

*The response to this call was generous and more contributions were received than could find space in one issue. Contributions were accepted entirely on the basis of "first come" and not on the basis of comparative excellence. Those not found in this number arrived after the columns were filled.*

*The editor presents these articles purely as an exhibit of the sort of program which chapters are sponsoring. They are not in any way intended to indicate the editor's idea of what is either good or bad in educational speech-making. The contents of this issue are dedicated to the god of things as they are.*

## A Background for Practical Research

*Address by* JESSE H. NEWLON at the

*Phi Delta Kappa Luncheon, Department of Superintendence, Washington, D. C., February 23, 1926*

I have used the term practical research to distinguish the thing I have in mind from pure research.

Certainly there is a place for pure research in education. In the physical sciences, men have spent lifetimes in making discoveries that appeared to have no practical application but that eventually produced most revolutionary results. There is a place for the individual who elects to devote himself to pure research in any sector of the field of education. In my humble opinion it will be better if this individual brings to his labors a broad background that will enable him to see things in perspective. In any event there is increasing evidence that we could well afford to make larger investments in pure research.

But I want to talk about practical research, and I have in mind that research which seeks to improve teaching more directly and immediately. Those engaged in such research may be students of finance or of buildings, of methods or curricula, or they may be conducting measurement programs; they may be delving into educational statistics of all kinds, but their immediate objective is to improve instruction. They are not interested in a research problem merely for the sake of the problem, or for the sake of research. Their aim is to make of research the means to an immediate end. Men who are engaged in this activity, as are most of you, need a broad and rich background for their labors.

Phi Delta Kappa is composed primarily of men engaged or directly interested in practical research. The three principles on which it is based—namely, leadership, service, and research—indicate that the founders of the fraternity realized the many-sided character of our profession. Leadership and service in modern life cannot be separated from research. More and more will progress depend on research.

The application of scientific methods to educational problems is almost entirely the product of the first quarter of the twentieth century. Only the meagerest beginnings existed prior to the year 1900. In the twenty-five years that have elapsed since that time, the most astonishing progress has been made. Whereas practically nothing was then being invested in research, today research is being carried on in schools of education and teachers colleges throughout the land, while many foundations and other private agencies are dedicated in part, or wholly, to the same cause, and practically every city school system of any size has at least one individual on its staff who has had excellent training in scientific method.

It is unnecessary to attempt any catalog of the achievements of research. Every phase of our school activity has been affected. To date, its influence has probably been most clearly felt in the more tangible aspects of education. Administrative procedure has been revolutionized, and research has perhaps made its greatest achievement in this field. This includes the organization and functioning of boards of education and of school administrative staffs, finance, and building programs. Teaching has likewise been directly affected. For example, much dead material has been eliminated from the course of study in arithmetic, and vital content has been substituted; the teaching of the mother tongue has been very greatly improved, and the teaching of the social sciences has felt the vitalizing touch of research, especially in the past decade. If one were to look for the most clear-cut example of how research can improve content and method, one doubtless would select the teaching of spelling, which has been revolutionized by educational investigators in the past quarter century.

There is much in the picture to make us optimistic, and yet a moment's reflection on the present need for educational research must give us pause. Three years ago we said to the Board of Education in Denver that if the content of the courses of study in use in our schools was ten per cent obsolete or irrelevant, the resultant economic waste to the city was five hundred thousand dollars annually. The educational waste is inestimable. And who will claim that our curricula are ninety per cent efficient? The Board instantly recognized the obviousness of such an argument and approved a recommendation for the expenditure of what then seemed a large sum of money on curriculum revision. While the process of curriculum revision in Denver, as in other public school systems, is not primarily a program of research but rather a process of applying the results of research, it is carried on in the scientific spirit, it involves a considerable amount of practical research, and above all is a recognition by the Board of Education and the community of the necessity and importance of research.

So much for the achievements that may be credited to the scientific study of education. Are we prepared to say that this instrument is as fine a tool as it ought to be? Are those who are engaged in educational research measuring up to their opportunities? Are their methods producing results that will make the people want to spend more money in scientific investigation? Why do educational programs based on sound research so frequently fail to secure or retain popular approval? Why do we so often fail in our efforts to secure a proper reorganization of a state department or the adoption of the county unit, or to bring about other educational reforms? I wonder if there is something wrong with our methods if the research workers and the executive or other educational leaders fail to maintain the proper contacts with the public or with the rank and file of teachers?

Let us consider for a moment the fate of outstanding educational programs. All of us recall the wonderful enthusiasm and

morale with which we fought the World War, and we also recall, painfully, the terrific collapse in morale which we suffered immediately following the signing of the armistice. This thing has happened in city school systems repeatedly. If you will but reflect for a moment, you can think of many a school program that has thus collapsed after the fight was apparently won—programs that have been notable because of the extent to which they were based on research and the best educational thought. It raises the question as to whether we have solved our research problems. You say that the failure of programs should not be charged to the failure of research. I grant that the causes of failures are frequently complex, but I raise the question as to whether, in seeking problems for research, we have always properly evaluated the educational needs for our day. If we have not, it is because our outlook has been too narrow. We have been concerned too much with the niceties of educational procedure and not enough with the deep, underlying relationships that exist between the schools and the public that supports them.

Some of us who are on the firing line of public education (and most superintendents are clear beyond the first line trenches—they are out on No Man's Land) have felt that there was a danger that the school of education and the schools might lose that intimate contact and understanding that characterized their relationship in the first two decades of this century, or until the upheaval of the World War wrought so many changes in the educational landscape and spewed out so many new social and educational problems.

I heard Dean James E. Russell say, a year or so ago, that when, about thirty years ago, he attempted to give a course in school administration in the University of Colorado, he found practically no texts and reference books available. There were no outlines to guide him. The only thing he could do was to go to the schools to find his problems, and even that was not an easy process at that time, for obvious reasons. Thus in the twenty years preceding the World War, when a science of education was being developed, the professors of education were in constant touch with the public schools and went there for the experience and the materials upon which to build their courses in education. It is a significant thing that the palmy days of school surveying occurred just previous to our entrance into the World War. This was the culmination of this intimate relationship.

How is it today when a young man desires to become a teacher of school administration in a college of education? He takes his Doctor's degree in administration. He is usually a youth with a little but not much experience in actual administration, ambitious, capable. He is apt to think that the conferring of a Doctor's degree has finished him off and made him an authority, admitted him into the sacred precincts. When he takes up his duties in September, he finds ready-made, extensive courses in administration that have long been given. There are thousands upon thousands of books dealing with every phase of education in the library of his institution, and it is quite possible that the school of education itself maintains a large specialized library of many thousands of volumes. Our young professor does not have to go to the schools to find something to teach. There is a danger that the school of education on the one hand, and the schools on the other, may lose something of that intimate touch that existed prior to the World War.

In the year 1920 there was an eruption, a near-revolution, in the Department of Superintendence. Some of the superintendents said: "We are going to cut loose from the N. E. A. We are going to slough off the many departments that are meeting with us. We are going to restrict membership to those men and women who are actually engaged in school administration; cut off the college professor. We are going to create a condition that will make it possible for us to give consideration to our own problems."

Fortunately, that movement failed. Superintendents cannot get along without the

college professor. The schools cannot get along without the college of education any more than the college professor or the college of education can get along without the schools. We are working on a common problem and we must keep in touch, but I think that this attempted secession of the superintendents in the year 1920 was significant. More than one superintendent has felt, in the cataclysmic ten years that have passed since our entrance into the war, that some of the leaders in schools of education were all but oblivious to the tremendous problems that the men on the firing line were facing. I do not think we have passed that danger. I have felt many times in the past decade, when a school program was at stake, when powerful influences in my community manifested utter indifference to the opinions of educational experts, that I was more or less in isolation; that the men engaged in research in the universities had little conception of the turmoil and the great changes that were being wrought in public education.

At this point, I want to note an achievement that I think is the first answer on the part of the university to this difficulty, and that is the type of course in school administration that has been worked out under the leadership of Dr. Strayer, a course that is based on the problem method, and that is built up on scores of problems taken right out of the daily experiences of school executives. The inauguration of such courses marks a new departure in the study of school administration and is the most hopeful sign on the horizon that the breach which has been developing will be healed. Another significant development is found in the policy now advocated and followed by leaders in the teaching of school administration under which the student of supervision or administration is not considered as having completed his technical education until he has served an interneship in a public school system.

In the tribute which we pay to the great changes that have been wrought by educational research in the last quarter century, we are likely to overlook the contribution of the educational theorists. At first blush, you may say that these men are not engaged in research, or that the theorist and the research worker are one. Many theorists are engaged in research and many research men are theorists. No sharp distinction can be made between the two, but by theorists I mean those who are concerned primarily with the development of the philosophy and principles of education as derived from experimental evidence. Certainly the theorists labor in the scientific spirit and they levy on research, not merely in the field of education but in the fields of biology, anthropology, sociology, economics—in fact, on all the sciences and social sciences. I daresay that the educational theorists have had more immediate and far-reaching influence on educational procedure than have the research workers. The above statement may be debatable, but in the debate I should elect to take the side of the educational theorists without desiring in any way to belittle the importance of research even if narrowly conceived.

Undoubtedly the greatest contribution to the educational thought in the past generation has been the conception of the socialized school, and this is a contribution of the educational theorists primarily. Through research the conception has been developed in detail and rounded out in many ways, but it has been the thinkers in the field of the principles and philosophy of education primarily who have given to the world this conception. This conception is revolutionizing the school. We look upon discipline now as an opportunity and not a problem. Behold the great program of student participation and extra-curricular activities! The educational theorists are revolutionizing methods of teaching. The socialized recitation is the product of their thinking rather than of direct educational research. Educational research has supported the idea and rounded it out, and will continue to modify and improve the concept. Such educational terms as the socialized recitation, the problem method, motivation, purposeful activity, and many others that have so greatly influenced our teaching, whatever their worth may be,

are the contributions of the philosphers and theorists.

My time is too limited to develop this point in any detail. My contention is that the educational theorist, whether he be a university professor, a school executive, or a classroom teacher, has exerted a tremendous influence on the direction of education, and he has exerted this influence primarily because of his breadth of view and perspective.

The educational theorists are interpreters of research. They have brought about the condition in which educational procedure is based on the acceptance of the theories of biological and sociological evolution. Too often, however, the men engaged in practical educational research and the educational theorists have lost contact. This is illustrated by the controversy over the function and scope of intelligence tests. Research devised the tests. Some of the research men were led in their enthusiasm to make extravagant claims. Publicists and propagandists, and the pseudo-educationalists took up the cry and exceeded all bounds of reason in the deductions which they made. Presently the educational theorists with their broader outlook arrived on the scene and began to point out factors that the so-called educational determinists were overlooking. This controversy and the resulting confusion is typical of the thing that occurs altogether too frequently in our profession. The educational theorists and the practical research men are just as indispensable to each other as are the schools and the colleges of education. But the theorists have frequently had the advantage because the very nature of their work forces them to maintain a broader outlook.

Why is it that so frequently the testing and measurement work in a school system is the most unpopular phase of the educational program? To my way of thinking, it is because those in charge frequently do not have the background in educational theory, in philosophy, in sociology, in biology, in psychology, and in practical contact with the daily problems of the classroom teacher and principal that will enable them to see their measurements in their true relationship. The director of research who is charged with the oversight of the planning of school buildings, if he is to do his work effectively, must know the theory that underlies the educational program to be carried out in the buildings. He must be familiar with the program itself, and he must know the administrative problems that confront the principal and teachers in the operation of the building.

The research worker should not only have this background of general training in educational theories and a first-hand contact with teaching and administration, but he must know how to interpret the results of his research. This is a long story in itself. If a program that is sound does not meet with popular approval, it is because we have not solved the problem of interpreting that program to the people. If a measurement program does not go over in a particular school system, it may be because somebody does not know how to maintain his contact with the teachers and to interpret research to them.

I come now rather abruptly to the conclusion. There is need for a wide extension of research in the next quarter century. It must be recognized, however, that conditions have changed. There is a danger that the colleges of education and the schools may lose contact and there is evidence that there has been some drifting apart, although hopeful signs of a rapprochement are appearing. Research in itself will not function. It must be practical. It must be understood. This requires interpretation. The research worker must have a background. He must keep in close touch with actual school conditions or with the public, as the case may be. He must see his own activities in perspective. It is not sufficient that he be trained in research alone. My prediction is that the greatest leaders in research in the next twenty-five years will be those who are masters of educational theory, who have a rich general education, who are wide readers not only in their own particular field, but in related fields, who have broad sympathies, and who maintain the closest contact with the life of school and with the public.

I trust I have not seemed too critical, or

merely critical in what I have said. If I were to undertake to speak of individuals, I could point out men who come very close to approximating my ideal of what a research worker in education ought to be. I have a feeling of deepest gratitude for the research men who have been associated with me and those who are today assisting me in my work. In the selection of them their practical experience and general education have counted heavily. I have leaned most heavily on them.

The educational programs with which I have been associated could not have been carried forward except for the services of research. I have felt, however, that in some respects schools of education and public school systems were drifting apart—that the close contacts of another period were not being maintained. I believe that on reflection most of you will agree with me that in the years when we have been feverishly developing the new science of education, when we have been called upon to meet such tremendous problems, many men have been rushed into the line who were not adequately prepared for their work. Their preparation has been lopsided. These deficiencies must be repaired if we are to meet the great issues of the next quarter century, and the young men who are entering the profession must be expected to come with a broader background of general education and with a clear understanding that the sine qua non of effective educational research is the maintenance of the most intimate contacts with actual classroom and administrative procedures and with the public.

## GAMMA CHAPTER

### Mastering the Mechanics of Composition

By H. Y. Moffett

For all its alliteration, this topic has a grim and forbidding sound. It will seem to promise little of entertaining or inspiring value. However, I am not averse to making this attempt, if only I may in the beginning guard against two possible misapprehensions. First, it may be natural to assume that the writer on such a topic must be himself a base and mechanical person, who imagines that misspelled words and misplaced commas constitute all of English. A certain fire-eating major of cavalry under whom I formerly served has been heard to say with some emphasis, "I deny the allegation, and I can lick the alligator!" Permit me mildly to quote the first clause of this observation and proceed. Again, I hope that no person will suppose that I myself make any claim to have "mastered mechanics" in the schools with which I have been connected. I can bring you no tidings of a tried and certain solution for this problem. I can only write rather generally on some phases of the matter as they appear to me.

We have heard often enough that conditions are unsatisfactory. All of us, no matter whether we teach in grade school or in university, are tired of finding the same dreary incapacity in our classes year after year. We grow weary of talking and reading and hearing about mechanics, and it is with pleasurable relief that we turn our thoughts from the dismal realm to more attractive portions of our field. Human nature inclines us all to feel vaguely that somebody must be to blame for the disgraceful conditions that we continually discover. A college professor finds forty common words misspelled in a set of papers handed in by a literature class of juniors and seniors, as one of my colleagues did a few days ago. He is amazed and disheartened; probably he feels that high-school teaching is in a hopelessly degenerate state; possibly, remembering the sturdy intellectuals of his own college days, the stern discipline of bygone courses in Latin and Greek, and the rigid requirements of ancient examinations, he decides that these illiterate students do not belong in college at all, are merely wasting time and degrading standards. Whether educational theorists have destroyed the soundness of secondary education, or the intellectual shallowness and jazzmania of the age is to blame, or the

flapper, or something else, at any rate nobody can expect the teacher of university seniors to bother his brain about sixth-grade essentials. Heaven be thanked, there still remain in his classes a small proportion of well-read and interested and capable students. With these he can labor with some pleasure and some worth-while results.

The situation of the senior high-school teacher is not greatly different. His course of study provides for work of high-school grade, and it is clear that the sixth-grade matter should have been handled in its own place. Perhaps he disgustedly places the blame on some incompetent further down the line.

It is true that the grades are very commonly failing to get results in mechanics. Among the causes of this failure may be mentioned irregular attendance, frequent changes of pupils from school to school and from city to city, poor preparation of teachers, and the one-teacher rural school, with its once-in-a-while attendance and its ten-minute class periods. Whatever the reasons, the fact remains that no teacher is safe in any other assumption than that few members of a beginning class know anything at all about the mechanics of composition. Herein lies the tremendous responsibility of the teacher in the junior high school. Great possibilities of service are hers. She has in her charge these malleable young minds, not yet grammar calloused, not yet over-sophisticated, easier to mould than they will ever be again. It seems to me that the most important person in the whole field of our subject is the teacher of seventh and eighth-grade language. If we have the wisdom to look well to her training, and if we can find a way to lighten substantially her burden of hours and numbers, she can do more than any other to remove the blot of illiteracy from American schools.

In helping her to accomplish this task, it is important that we provide her with a course of study that is based on reality. Such a course will not be pretty to look at; it will seem very low and inferior compared with others; it can be prepared only by teachers — not administrators — of long service and having flexible minds in spite of that service. Even these can succeed only by resolutely forgetting about other courses of study and the appearance of material in print, and determining to keep in mind actual children and actual classroom facts. Far too many present-day courses are compounded chiefly of nonsense. The course of a certain great state bearing the date of 1924, lists among the minimum requirements of the first grade: "Period at the end of 'telling sentences' in dictation." We are seriously informed that by the end of the fifth grade "pupils should have *mastered* the use of capitals, the period, the question mark, exclamation point, comma, colon, hyphen, quotation marks, apostrophe, abbreviations, and contractions," and furthermore, "They should have developed a high degree of sentence-sense, and should be able to make careful and correct selection of words that express exactly what is meant." We here note with admiration that mere mechanical trifles have been attended to, as by a magnificent gesture, so that we are now free to advance confidently to the virtues of exactness and gracefulness in style. In the sixth grade we naturally make an advance over the fifth, and consequently we find the minimal demand for "the complete idea of what a paragraph is" and "the ability to construct complex sentences, as the pupil must be made to feel the need of saying something about the subject of a sentence." Is this merely a brilliant jest, or at worst only a waste of paper and printers' ink? I suspect that there are young teachers in village schools who are so naive as to imagine that the leaders who have built these huge cloudy symbols of a high romance and caused them to be published at state expense were really serious. It may well be that when this beautiful faith seems not to fit with the facts of her classrooms, she blames herself for incompetence and grows discouraged. Isn't it time to put some realism into courses of study? Ought we not to see that statements of minimum requirements for a given grade are not actually the maximum possibilities for the upper fifth of that grade? Then teachers can take these documents seriously, and establish some relation be-

tween the printed scheme and the average pupil.

What a simple thing it seems to put a period at the end of a declarative sentence—to the person who has never tried to teach indifferent, perverse, lazy young Americans to do it. Yet, really, to what psychological depths the problem takes! Many children must undergo a complete mental overhauling, and a reorganizing of their whole scheme of thinking to arrive at a knowledge of the difference between one sentence and two sentences. To know this and then to remember it! Think what *that* implies. When once that ability is really acquired, it is perhaps not so far after all to that paradisal second grade standard where all are "unwilling to hand in poor work." When we have gained such discipline as that, we will have no troubles worthy the name, for after we present a principle or state a fact, our pupils will seize upon it, eagerly proceed to make it their own, and thereafter put it into practice without further comment by the teacher. Having developed a zeal for perfecting each bit of written work which reflects their personalities, they will rapidly educate themselves, and faulty mechanics will scandalize us no more.

But sarcasm is easy and cheap, and it is not constructive. It really is possible for us to teach *many* of our pupils the difference between one sentence and two, so that they actually can meet this requirement for the period. The best beginning that I know is to require the child to pick out the units in an easy series of sentences, mostly simple sentences. The next step is to set him at the task of separating into sentences paragraphs printed or mimeographed solid. Much care is needed in the preparation of such paragraphs. The sentences must be short, containing no puzzles; the passage should make sense in one arrangement only. If occasional insertions other than the periods and capitals are necessary they should be supplied. At the very beginning each sentence should consist of a single clause, with single subject and verb. Gradually a few complex sentences and simple sentences with compound subjects and verbs may be introduced. An occasional question may be mixed in with advantage. It is well to use passages that have some interest, such as little stories, meaningless until the division into sentences has been made. Fables are good, being simple and short enough, but almost any little anecdote may be rewritten to serve the purpose. Here is a sample that has proved satisfactory:

> A fox had fallen into a well he had been trying to get out for a long time finally a goat come along he was hunting a drink he asked Reynard if the water was good the fox replied that he could not drink enough of it upon hearing this the goat leaped into the well then the fox jumped upon the goat's back and thus got out of the well when he was safe on the ground, he made fun of the goat.

Here is a more advanced specimen:

> The emblem on top of his totem pole represents an Indian's claim to fame it is a sort of distinguished conduct medal and a coat of arms have you ever seen one of these grotesquely carved poles with the figure of an animal on top of it my uncle told me about a very strange totem pole in front of a house in Alaska there is a figure of a white man on it he is represented wearing a frock coat and a stovepipe hat in the house lives an old Indian woman she was the first Indian in that part of Alaska to see a white man this experience made her famous now her family worships the strange figure of the white man.

This activity has some of the attractiveness of working out puzzles, and often a child works with a real desire to straighten out the tangle and see what the story really is. But the work must never be allowed to become mechanical for a moment. There is no excuse for a single error in the performance of the task.

In my own teaching I find it necessary to accompany much work of this kind with the study of what a sentence is and how it is made. The child is advanced very gradually to sentences that are slightly harder, and complete mastery is insisted upon at every step. A gap or a jump is as fatal here as

in the study of arithmetic, though teachers who have assumed that the English of the schools is the natural speech of their pupils may not see the need of such a method. Point by point, with the most cautious advances, pupils are instructed in the verbs of one word, those of two and of more, and verbs the parts of which are separated by other words; then substantives, prepositions, and the modifiers that work with other words to make up sentences. Every tiny advance in complexity I must prepare for by obvious and full illustration. I must provide an astonishing amount of review and practice in identifying the various elements at work in sentences. By this means I find it possible to bring all but the distinctly sub-normal members of a class to some degree of sentence sense.

A few other uses of punctuation are so important that we probably ought to require mastery of them during the junior high school years. These are in number very few, but the few are of extreme importance, for they are not matters of whim or of convention merely, but, like the period, are definitely bound up with the pupil's thinking. Essential uses of the *comma* include: interrupters, such as *yes* and *no* in answer to questions and words of address, separation of expressions like *he said* from quoted matter, and the separation of members of a series. With an exceptionally capable class of ninth-grade children we might add the comma between co-ordinate clauses connected by such words as *but* and *for*, and by *and* when the subject changes, for this item of knowledge is a considerable aid to comprehension of structure and thought relations. But it is much wiser to let this detail wait until the tenth year if there is any doubt about the mastery of the simpler matters. The comma after a sub-ordinate clause standing first in the sentence is important in connection with our attempt to induce children to use complex sentences and to vary their style by frequently beginning with something other than the subject, but naturally we have no business with such an attempt at post-graduate work in the case of those who are as yet scarcely to be trusted with simple sentences. There are times when this principle may be dealt with rather casually late in the seventh year, though in general I doubt the wisdom of making it an essential before the ninth, at least. As for the comma with the non-restrictive clause, I can only say that I have for a long time been trying to teach the difference between restrictive and non-restrictive, and have never yet been clever enough to get the idea across to *all* the members of even a college freshman class. I shall deeply appreciate information from teachers who have developed methods of accomplishing this thing, for I haven't yet been able to do it. The period after an abbreviation and the apostrophe with contraction and possessive may well be considered matters of spelling, *Mrs* and *etc* being considered as misspellings when the period is lacking, and the possessives the same. Whereas courses of study may glibly demand "the correct use of the apostrophe with possessives," you and I know what worlds of difference lie between the different types of possessives as to difficulty, and that these very different types should be taught at different places in the curriculum. If we teach one type at a time with great thoroughness, and then insist upon constant display of this bit of knowledge in the written work of the child, we can succeed.

The best method of teaching punctuation habits that I know is one which requires the pointing of a great many unpunctuated sentences, printed or mimeographed, or even dictated, though the latter consumes too much time. Personally, I have found such practice extremely valuable if properly handled and an absolute waste of time if handled in a perfunctory or mechanical fashion. The sentences to be used should be carefully made. They should be short and easy, with no confusing elements. With each set of exercises embodying a certain principle should be mixed a few for the review of former lessons and an occasional specimen which is all right as it stands, so that the pupil *has* to think all the time as he works. No pupil is permitted to insert a mark which he cannot justify by referring to the principle involved; I have been accustomed to fail an exercise of twenty

sentences for two omissions of necessary marks or one insertion of a mark that is not needed. It is very important to destroy the habit of sprinkling marks over the paper without clear understanding. Such exercises should be done during the directed study time of the class period, when conditions can be entirely under the control of the teacher. I have found that when this method is used properly, it will teach mastery of the essentials of punctuation to practically every child whose attendance is regular.

Public opinion continues to regard *good spelling* as a mark of education. Business men value it, and parents prize it. It is a rare newspaper that does not print about once a year an editorial dealing with the failure of modern schools to teach this art. And English teachers themselves, whatever their practice may be, still appear to believe that ability in spelling is one of the most important aims of English teaching. A study made by Professor Pendleton lists 1581 social objectives of school English in the order of their importance according to the judgment of a large number of competent English teachers. At the head of the entire list stands "The ability to spell correctly without hesitation all the ordinary words of one's writing vocabulary." Fifth in order of importance of these 1581 objectives is "The ability to spell—without great concentration of attention—during one's straightforward writing, all the very common words of English written communication." In view of the agreement as to the importance of this objective, and in the light of the present perfectly familiar situation in our schools, it may seem that all of us ought to devote a good deal of time and thought to the matter of spelling, perhaps more than some of us now devote.

If we have failed here, it is certainly not because we lack information about the materials of spelling. In no portion of our field has scientific investigation served us better. We know what words are important, and we can very easily learn to know beforehand just what difficulties and weaknesses we will find in any class that comes to us. While we know less about method than about the materials, teachers are now pretty generally informed of the best procedure; here I need only allude to the steps of the method which seems to give the best results. There is preliminary testing, to show teacher and pupil what weaknesses exist; then the actual teaching of the really small number of words that count for most, presenting them in very small groups; reviewing frequently with increasingly severe grading, grouping similar forms together so that the correct images are intensified, focusing attention upon the particular letters that cause difficulty, testing by means of dictated sentences. In the end there must be the insistent demand that a word once adequately taught must appear correctly in the later written work of the pupil. Complete success is attained, of course, only when the correct form of the word runs out of the pupil's fountain pen automatically *when his mind is fixed upon subject matter*. You will agree with me that this represents no petty attainment.

Concerning another phase of mechanics, the form and physical arrangement of the written composition, little has been said. In most schools we find more or less elastic requirements that pupils must write with ink on one side of the paper, and must fold and indorse their compositions in a certain way. I have felt for some time that this is a matter of some importance in social training. I believe that it is worthwhile to set very positive, though simple, standards of form, and to require them to be observed invariably in *formal* written composition. There is no reason why a pupil cannot be required to use the specified kind of paper and ink and to prepare his work in precisely the right form every time; there is no reason why a teacher should ever accept a product which fails to meet these standards. We all know the type of pupil who will be just as negligent and forgetful and slovenly as the weakness or the good nature of his teacher permits. This issue ought to be settled at the very beginning, with measures as harsh as may be necessary. One side doesn't mean both sides; black ink doesn't mean a hard pencil if the ink supply happens to run out; the standard theme paper

cannot be replaced by some other kind backed up by this or that lame excuse; "just forgot" cannot take the place of a clear margin. In this regard I am probably guilty of Prussianism, believing as I do that one of the most fundamental lessons in citizenship ought to be that of rendering strict obedience to wise ordinances. To appease my democratic friends I hasten to add that I am perfectly willing to let the class have voice in deciding what rules for theme-form we shall lay down. I am willing to explain at length why a few simple but invariable rules are necessary. I am anxious to do anything I can to make pupils realize that this is not a matter of a tyrant's whim, but a matter of genuine significance to them. But when once we have established these regulations, they must be observed.

Of course I am concerned primarily with inspiring children with the desire to write compositions that are as good as possible in style and in subject matter. I want them to care for what they write, to prize highly the products of their own minds, to "be unwilling to hand in poor work." I like to see them eager to receive back a piece of work that has been perfected and handed in, and to find out what classmates and teacher think of it. But I do not see how pride and conscience in one's work can exist apart from care and pains in the doing of it, even to the detail of making the handwriting as clear and neat as the individual can possibly make it. Does this savor too much of teacher-domination? If it does, then let me make the point that to write a slovenly product which another person must read is an unsocial act, a plain insult to that other person. That is an elementary lesson in common courtesy. I have no right to expect another to read a letter which I have been so ill-mannered as to prepare in careless or illegible form. That is a lesson worth teaching and worth learning.

Of course the letter is the form of composition that has the most practical value. Consequently, it is highly important that we try hard to teach our pupils in the junior high school to write letters which are effective and socially acceptable. Probably most schools have enough practice in letter-writing, yet results are not entirely satisfactory. I have yet to meet a class of any grade in which every student was secure in his knowledge of the conventional mechanics of the letter. The junior high school may well set up the aim that no pupil ought to pass on—or out—without having formed a few definite habits in this form of good manners. In after life there really ought to be no uncertainty about these matters, no puzzlement as to whether a comma, or a colon and a dash, or a semicolon is needed in this place, or how such parts of the heading ought to be placed and punctuated. I have been able to establish a degree of this kind of knowledge only by devoting an important proportion of the composition time during these years to the writing and folding of letters and the preparation of envelopes. A most profitable form of drill consists in separating, punctuating, and properly placing on paper headings, conclusions, and superscriptions that have been put before the child in solid form. It is necessary to require some pupils to perform many such exercises, never mechanically, but always thoughtfully. If the textbook devotes a chapter or other definite part to this subject, the teacher ought not to try to teach it all in a chunk and consider the matter done; there should be frequent returns to the principles, and as the child goes on, he should have frequent opportunities to use in letters—I need not pause to urge the necessity of motivation here—the conventions that we have taught him. The practical value of mastery surely justifies us in devoting to these details a considerable share of our time and our planning.

Thus far I have been speaking about average pupils and those who are below the average, the misfit, the retarded, the indifferent, the genuinely incompetent, who have made about as much mental growth as they will ever make. Generally the superior child presents no difficult problem in this connection. And yet we sometimes meet a pupil who is unusually clever and original, but who has adopted the wretched heresy that it is possible to substitute some *other* virtue or quality for a virtue or quality which the school requires and attempts to

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Copy from Chapters for publication should be edited by the Chapter and sent by its corresponding secretary to the managing editor. Members in the field are invited to send communications direct to the managing editor.

## Keep In Good Standing

Most of the chapters will soon send out the annual statements of membership dues. Payments are to be made in advance before June 30th.

Certain acts of the Eleventh National Council which met at Chicago in December make it important for every member to keep up his good standing in the fraternity and to avoid falling into arrears. The Council decided that members whose dues become delinquent shall not receive copies of the *Phi Delta Kappan* during the period of delinquency and will not be furnished back numbers after a belated payment. Consequently the only way to be assured of an unbroken file of the magazine is to keep your dues paid up promptly each year.

The Council also adopted the Service Key as a recognition of educational and fraternity service. Seven years of *unbroken* good standing is one of the requisites for securing this key. Already many inquiries are coming in from men who have been careless about payment in the past and who are, therefore, ineligible to wear the key. If you desire to become eligible for the Service Key in the future you should not allow yourself to fall into arrears.

Your active chapter secretary is a hard-working man. He hasn't time to send out a lot of follow-ups urging you to pay up. Moreover he must have your payment early enough to clear up his accounts with the national office before his rush work and examinations at the end of the college year.

The National Secretary wishes, therefore, to make an appeal to you for prompt attention to the communication which you have received or will soon receive from the secretary of your local chapter. You will do a good turn both to him and to yourself by writing your check and dispatching it to him at once.

## New Chapters

Alumnus Mu chapter at Muncie, Indiana, was approved by ballots of the active chapters on March 4. The new alumnus chapter has a membership of 14, and their residences are so close together as to give promise of a homogeneous organization with splendid opportunities of accomplishment.

Alumnus Nu, known as Fort Dearborn Alumnus Chapter at Chicago, Illinois, was approved March 15. This group breaks all records for size, having 41 charter members. On its rolls appear the names of many men prominent in Phi Delta Kappa affairs, among them two past national officers and one national officer-elect. This chapter starts off with a zest and enthusiasm that should result in a fine chapter activity. If these brothers fail to show the way for alumni chapters in general their advance indications will be sadly reversed.

Just as we go to press the twenty-fourth affirmative ballot was received on the petition of the Colorado State Teachers College for an active chapter. This is the necessary two-thirds of active chapters and makes the new chapter at Greeley a certainty. Its official name will be Alpha-Mu. As this issue goes to press no installation date has been fixed. The ceremony will probably take place some time in April.

## The Washington Luncheon

The annual luncheon in connection with the meeting of the Department of Superintendence was held at the New Washington Hotel on Tuesday noon, February 23rd. The attendance was four hundred twenty-three and the party was characterized by the usual youth-renewing comaraderie which we have grown accustomed to expect in these gatherings. Everything that transpired met with loud and continued applause, including the farewell bows of the retiring members of the national executive committee.

Brother Jesse H. Newlon, Superintendent of Schools at Denver, Colorado, made the address. His effort was hospitably received by the diners and is published elsewhere in this issue for the benefit of those who were not fortunate enough to be present.

All local arrangements for the affair were in charge of Brother Frank Phillips of Washington. Brother Phillips and his committee handled the details admirably and efficiently and the fraternity is deeply indebted to them for their labors.

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secure. To me it seems clear that we cannot accept some ability which we can scarcely presume to teach at all in the place of an entirely different ability which we *must* teach. Very early we ought to stamp out this *something else* delusion. Now it is extremely prevalent among university freshmen who find themselves suddenly relegated to no-credit courses in grammar and rhetoric. These young people all have about the same attitude of pained amazement, with a tendency to criticize the irritating college standards; this is an old story to college teachers. "They *always* got good grades in English;" they wrote for the school paper, etc.; they never had any trouble before; they *thought* this or that, and so on. The shock is a severe one, and there ought to be less of this sort of thing. These young people should be enlightened much earlier.

We all understand that in the ordinary conglomerate class there occurs a shameful waste of the time and the possibilities of the superior pupil. No doubt future students of history will look back upon this as the most stupid and incredible example of wastefulness in an age of waste. This problem is largely an administrative one. Probably the best method of solving it which we know—unfortunately a method not yet possible everywhere—is the division of a class into groups according to ability. We can deal much more economically with groups that are reasonably homogeneous; the bright children are not subjected to the endless repetition and drill which the backward ones require. The teacher can concentrate effort upon the needs and possibilities of the pupil, a matter which is exceedingly important in view of the fact that there is often more difference in essential ability between two children in the seventh grade than between one of these and a high school senior. The weaknesses are individual matters, and they can be best dealt with by a method approaching more nearly to individual instruction than is possible in the undifferentiated class.

Now I could just as easily have approached this subject from a different angle. I might have insisted upon the relation between the mastery of mechanics and motive and appeal in composition work. Nothing is more certain than that a pupil who has thrown himself into a creative project with the hearty cheerfulness that results from successful motivation, a pupil who has enthusiastically spent his effort on a product intended to amuse or interest or inform his fellows, will be sensitive to criticism of faults in mechanics that spoil his effect. This is especially true in the class in which wise leadership has built up a spirit of co-operation and sportsmanlike criticism. I am anxious as anybody to give pupils all the freedom possible. But freedom is scarcely possible where discipline is lacking, particularly self-discipline. And after all, is it not our duty and our high privilege to bring pupils, by whatever means, to the point at which they begin to exercise self-discipline, to *care* about the work they do, to take pains and do things right? I am in hearty sympathy with all the attempts that teachers are making to

motivate the mastering of mechanics. I am eager to learn about and to apply every hint of the element of play or contest which will give purposefulness to the drudgery of drill and prevent the teaching of mechanics from being itself a mechanical thing. I can say amen to every syllable of the excellent article by Miss Inglis in the *English Journal*, 7 October, 1924. But I suspect that for some time to come our success in mastering mechanics will continue to depend pretty largely on our willingness to return with dogged patience to the few fundamental items which we believe ought to become matters of general habit to as many as possible of the young Americans who spend certain precious months of life under our control.

## DELTA CHAPTER

### The Educational Value of Agricultural Instruction in Elementary and Secondary Schools

By John W. Gibson

Traditionally the childhood of the race was spent in a garden and no other environment has ever been found to equal it. The opportunities which it affords for child activity and the multitude of desirable interests which it stimulates cannot be overestimated. Froebel saw it as "a true school of happy occupation" and chose the one word "kindergarten" as expressive of everything that his whole scheme of elementary education included. Gardening, indeed, stands out as the most intensive and humanly adaptable form of agriculture.

From the very dawn of history the practice of agriculture in one form or another stands out as the most universal of all forms of human occupation. To poet, philosopher, and economist alike it makes its various appeal. Both directly and indirectly it holds the common interest of mankind without respect to age or station. No matter how firmly convinced we may be as to the truth of that great saying that "Man shall not live by bread alone" we can not well forego our gift of "daily bread" and with each returning year we hail anew the sower as "Godlike he makes provision for mankind." Let once the ponderous wheels of food production pause but for a moment and the whole world stands aghast, face to face with consternation and distress. Surely these plain facts suggest some of the reasons why the teaching of agriculture should find a place in every system of elementary and secondary education. There may also be others.

Of old, kings and sages set great store by the art of husbandry. They appreciated not only its great intrinsic value as adding to the wealth of the nation but also its importance in promoting contentment amongst the people and greater stability in government. Kings and princes then, as now, became its patrons and occasionally its leaders. Instruction in gardening and other forms of agriculture constituted a part of the training of the sons of Kings and Emperors. Then, too, the peasant in his lowly station was teaching his sons with unremitting toil how to raise such food crops as were needful for man and beast. The objectives, though different, were both essentially utilitarian.

With the passing of the centuries the art of food production has steadily been growing more complex and difficult; so much so that men have been driven to study it more closely in all its relationships with a view to discovering the laws that operate towards the achieving of success. Thus a science of agriculture has gradually been developed. More and more the art of farming is being based upon the known laws of physical, chemical, and biological science, and agriculture has come to be recognized the world over as a great composite science. He who would succeed in this "oldest of arts and youngest of sciences" must needs apply himself to careful study. Such a study must be truly scientific and is usually regarded as vocational, hence we have become acquainted with the descriptive phrase "vocational agriculture" now commonly used to designate courses in agricultural science as offered in American schools. Its main ob-

jective is to offer training for boys who wish to engage in farming.

But the study of agriculture in both elementary and secondary schools may be encouraged for very different and possibly more fundamental reasons, viz., for the sake of those results that may be effected in the development and character of the student himself. As the results in this case are to be measured in terms of established educational standards we may speak of this type of agricultural instruction as "educational agriculture."

Just when and by whom this concept of education *through* agriculture, rather than *in* agriculture, was originated is difficult to state. It seems, however, to have come down to us directly from the "New Science" presentation of Sir Francis Bacon (1561-1626), followed by the work of the great Moravian teacher and educational reformer, Comenius (1592-1670), from the far-reaching educational theory as presented by John Locke (1632-1704), later to be extended and more attractively presented by the intrepid educational revolutionist Rousseau (1712-1778), and finally from the new educational method of the great Swiss schoolmaster of Yverdon, Johann Pestalozzi (1746-1827). It was Pestalozzi who sought through the use of a wide range of studies, including several different branches of agriculture, to transform the lives of some "fifty little beggars" and through his unique methods to teach them "to live like men." Finally it remained for another notable Swiss educator, Fellenberg, friend and disciple of Pestalozzi, to demonstrate, largely at his own expense, the principles of realistic and naturalistic education for boys in an agricultural environment. Firm in the belief that agriculture more than any other subject offered the greatest opportunities for "cultivating the faculties and producing permanent happiness" he established at Hofwyl a great agricultural and mechanical institute for the training of boys. In conformance with Pestallozian principles, he based the teaching of the boys in various subjects upon their daily work and experiences in his great farm school. Education to him was not a preparation for life but rather life itself. Whilst in his hands, aided by a large staff of unusually gifted teachers and unhampered by financial difficulties, this remarkable demonstration of the practical working out of what might well be designated "the New Education" was eminently successful and attracted widespread attention. An attempt to institute a similar system was made in several of the leading countries including the United States but with only indifferent success. In a limited number of cases great school masters who had caught the vision and the impulse springing from the work of these great men were able to organize education on a similar basis. Perhaps no finer examples could be cited than that of the school at Bedales in England and also that of "the great school master," Sanderson of Oundle, so well described by H. G. Wells. Some of our more recent but less modern systems of agricultural education have doubtless been influenced in some measure by the achievements of these great leaders and there may yet remain some chance for the fulfilment of the wish expressed by John Griscom who visited both Pestalozzi and Fellenberg in 1819 and who, when concluding his report on this visit, said, "I cannot but cherish the hope that this scheme of education of combining agricultural and mechanical with literary and scientific instruction, will be speedily and extensively adopted in the United States."

When the Massachusetts Horticultural Society sent Henry Lincoln Clapp, then principal of the Roxbury school, to Europe in 1890 to study the working out of elementary agricultural education, especially through the agency of the school garden, they started a movement which has had an important influence on elementary education both in Canada and the United States. In his travels throughout Europe, he found wide variation in method and objective in agricultural education as well as in details or organization and management. He found occasional civic and institutional gardens that had been in operation for centuries as well as thousands of modern gardens used entirely for instructional purposes. There were still to be found the old Eastern aesthetic culture type of garden; the ex-

hibition or museum type of garden occasionally met with in Italy; the horticultural and botanical garden as seen in England, France, and Spain; the world-famed floral design garden of Paris; and the scientific botanical garden of Germany. Appearances differed no more widely than did the various points of view of those who engaged in the work. What was "a studious pleasure" to the man of science had been and was still "a worthy humiliation" to the mediaeval-minded monk as it had been to slaves and peasants in most of the older countries. He also found, however, that some 200 years previous to his visit, Augustus Francke had established in his famous "Institution" at Halle in Germany, not only a botanical garden for the use of the students in his higher scientific school or "Pedagogium" but also a horticultural garden for the better instruction of the boys in his orphan, or "Burgher" school. He found that from that time on several attempts had been made in different European countries to include practical studies in gardening and other forms of agriculture as part of the school curriculum. In almost but not quite all of these systems, the economic or utilitarian aspect of the study of agriculture was uppermost. The one outstanding exception was Switzerland, the home of Pestalozzi and Fellenberg! Here the educational viewpoint was uppermost and from here the 20th century viewpoint was imported to America by Clapp, who the following year established at his school at Roxbury, the first school garden in America. Composed as it was exclusively of wild plants collected by the boys and girls of his school, the educational aspect of the instruction was from the first apparent.

With the dawn of the new century a new viewpoint in elementary education, sometimes referred to as the "nature-study point of view" spread rapidly throughout the United States. A great impetus was given to the movement by the epoch making work initiated at the New York State College of Agriculture under the distinguished leadership of Dean L. H. Bailey, ably assisted by Mrs. A. B. Comstock and Mr. John Spencer. As the New York State Legislature had made a grant towards the advancement of elementary agricultural instruction, the work was taken up in earnest and summer courses were established commencing in 1898 where many teachers caught the idea and also the enthusiasm of Dr. Bailey and his co-workers. The publication of the Cornell Series of Nature Study leaflets was of untold value in guiding the new studies along right lines. The educational viewpoint was strongly emphasized, but never to the exclusion of utilitarian values. "I stand for the spiritualizing of agriculture," said Dean Bailey, and the ideal which is reflected in this brief statement is the highest and best that has ever been set forth. It goes further than the principle of learning through doing. It points forward to the results to be achieved in the character of the learner. Neither is it the principle of knowing in order to do, and do more nobly and efficiently. It is rather learning (in the best way) in order to do (the best things) in order to become (a better citizen). True education, in short, must always be "a becoming"

During the closing decade of the 19th century, Dr. James W. Robertson was Dominion Commissioner of Agriculture. He too believed not only in improving the practice of agriculture in all its branches as Canada's chief national industry, but also in "the spiritualizing of agriculture" through education. He preached the dignity of all labor both for young and old. Not mere work alone, but thoughtful, intelligent, purposeful work tends towards true educational values. Such work always resulted in enrichment of experience. The meaning and purpose of elementary agricultural instruction as planned for Canadian schools has been well-expressed by Chief Inspector Cowley of Toronto as the "seeking of education through utility as well as utility through education." He described a school garden as "a happy field of expression, an organic part of the school in which boys and girls work among growing things and grow themselves in body and mind and spiritual outlook." This point of view is in complete harmony with that of Dean Bailey and many other educational leaders

in Canada and the United States, and especially during those years when the movement was in its infancy. Unfortunately this high educational ideal has not been wholly sustained in more recent years. In Canada, as in the United States, the necessity for increased production of food stuffs during the period of the World War swept all other objectives aside. Then both elementary and secondary schools were mobilized in the common purpose of an ever-increasing agricultural production. Educational objectives were overlooked and mostly forgotten in the one overshadowing purpose of "helping the King to crush the Kaiser," as one little Canadian girl was heard to remark in all earnestness when questioned as to why she was making a garden. Doubtless all such children's gifts were "twice blest." The result of those hectic years of strained economic endeavor is still apparent in both Canadian and American agricultural education. Governments were aroused to provide generous financial aid for the furtherance of agriculture instruction and home making. The Canadian Federal Government voted one million dollars per year for ten years as direct aid to the provinces for the furthering of instruction in agriculture and home economics. The United States Federal Government did something similar but on a much larger scale. But legislators and government administrators always demand tangible, if not spectacular, results for moneys so expended. Obviously such material and immediate results could only be made evident through the exploitation of agricultural education on a production basis. The larger educational aspect is not so easily seen, is harder to explain, and does not lend itself so readily to glowing reports of progress. In both countries at the present time there is a growing tendency to retreat from the high ground of original educational purpose and to fall in line with most of the European countries in considering agricultural instruction chiefly in the light of its vocational importance. This is to be regretted. Surely it would not be considered a mark of failure if few of those who study chemistry in our secondary schools should become industrial chemists or if few who study electricity become electricians.

Apart entirely from its technical or intrinsic value, the study of agriculture has a valid place on any curriculum of elementary or secondary education. It brings the student face to face with the many and varied phenomena of nature. It leads him to ask new questions about old things and trains to accurate observation and rational conclusion. Through a better understanding of scientific principles, it widens the student's interest in his whole natural environment and in the great problems of food production whether of his immediate community or of the world in general. It tends towards resourcefulness and self-reliance in experimental and demonstration work, and trains to habits of industry and close attention. Finally, it helps to make young people, girls as well as boys, more appreciative of the beauties and harmonies of nature and more reverent also in their attitude towards the sacredness of life itself.

Since the withdrawal of federal support for agricultural education in Canada in 1924, some of the provinces have had to curtail somewhat their plans and operations. The older, wealthier provinces of Ontario and Quebec have been least affected, and have made few if any changes in their respective programs. As each province has absolute autonomy in matters pertaining to education, no doubt each will in time, discover its own best way of meeting the situation. A few vocational schools of agriculture and home economics were established with the aid of the federal grant, but some of these have already been closed. Vocational short courses are offered by the various agricultural colleges and are attended mostly by young men who are already engaged in farming or who contemplate going into that work.

Agricultural courses in high schools have made considerable progress in most of the provinces, Ontario and British Columbia leading in this respect. In both of these provinces, agriculture ranks as a regular subject for credit equal with any other subject. It is one of the optional subjects and can be included only in such schools as

employ specialists in science and agriculture. This means that the School Boards concerned must give their approval in all cases, and must engage properly qualified instructors to handle the work. The time occupied varies from three to five hours per week throughout two successive school years. Special financial assistance is granted by the provincial government to all School Boards that undertake the work.

The courses are made broadly educational, and may be taken by either boys or girls and the experience of all instructors has been that high school girls are quite the equal of boys in the agricultural courses. The work is conducted in the most scientific manner possible. In addition to a well-equipped agricultural laboratory, each school offering the course must establish and maintain experimental and demonstration plots for field and garden crops, flowers, vegetables and cereals. Lantern slides and reference books on all branches of agriculture are provided. Regular provision is made for frequent visits to suitable poultry and dairy farms, live stock exhibitions, fruit and experimental farms. Home projects in agriculture are carried on by the individual students.

It will thus be seen that the high school course in agriculture as organized in Canada is far from being "book agriculture." It is handled by agricultural specialists (in British Columbia, they must be graduates of an agricultural college as well as being trained teachers) and taught by the laboratory-field-lecture method. High School agriculture, as organized in Canada, therefore is made first of all broadly educational, thoroughly scientific in treatment, and only incidentally vocational. A fair percentage of the boys who take the course later go to Agricultural College, some go into teaching, and not a few go into their favorite branch of farming. Many of the girls go into teaching and become our most efficient teachers in rural schools.

Such a course in agriculture cannot fail to be beneficial to young people no matter what their chosen vocation may be. It cannot be efficiently taught along the lines indicated without being essentially practical as well as broadly cultural. What we stand in greatest need of at the present time is a better type of organization of the schools themselves, such a type of organization as will make possible large centrally located graded schools with high school departments in which good agricultural courses can be maintained.

## TAU CHAPTER

## Problems in Secondary Education

By James N. Rule

*Department of Public Instruction, Harrisburg, Pennsylvania*

The United States has embarked upon the unique experiment of making high school education universally available to all girls and boys of high school age. In early colonial days, elementary education was far from being universal; and a high school education, as we know it today, was unknown. Nothing more than the merest rudiments of an education were needed in a civilization geared to an ox cart. Twentieth century civilization, however, geared to a gas engine, has made not only a broad elementary education universal, but also a high school education a necessity.

*Why this growing insistence by America upon a hieh school education for all?*

Let us note first in passing that this insistence has become vocal and effective only within the last twenty-five years. In 1900 there were but 32,000 pupils enrolled in all the high schools of Pennsylvania, whereas today there are, roughly, one-fourth of a million. Fifty years ago it took a special act of the legislature to establish a high school in Pennsylvania; whereas today it is the obligation of every school district in the Commonwealth to provide high school facilities for all its young people who have expressed a desire and shown their fitness to pursue a high school education.

Many factors are working to the end that a high school education may be brought

within the reach of every girl and boy of high school age in Pennsylvania.

1. The commercial and business world is recognizing the value of a high school education and generally requiring this as a minimum basis for entrance into commercial work.

2. The invention of machinery has made the labor of young people decreasingly profitable and unnecessary. The period of schooling has been correspondingly increased.

3. With the increasing complexity of modern life has come an increased demand for professional abilities and skills of many kinds. This has vastly increased the attendance at higher institutions of learning with its corresponding reaction upon high school enrollment.

4. Labor, too, is demanding that young people be removed from industry and enjoy the full advantages of a complete high school education before entering upon their occupations.

5. In my judgment, however, the insistence upon, and indeed the chief justification for, making a high school education universally available is the outcome of an instinctive urge, arising from the very core of the nature of a true Democracy, the desire for self-government. The simon-pure democracy of old New England is gone and gone forever. Our government must necessarily be one based largely upon delegated powers, that is, a representative or republican form of government. People are looking less and less to Harrisburg and Washington to find out what they must or may do. We seem to be developing a principle in the division of powers between the Federal and State and local governments which will probably allocate relatively fewer, certainly not more, powers to the Federal government than to State and local units, but these powers will be intrinsically greater and more effectively exercised than now. In other words, we are approaching, I believe, a degree of centralization of authority in the Federal Government relatively less quantitatively, but qualitatively greater because based upon an intelligent distribution and a willing and mutual acceptance of responsibilities. The same condition seems to be developing in the relation of local governmental units to the State; relatively fewer powers lodged in the State but these few more vigorously and effectively exercised.

State and Federal agencies exist primarily to do only those things that they can do better and more economically than the local units can do them for themselves. Increases in Federal and State control over and above this minimum have come about largely as a result of the inability and unwillingness of local units to control themselves. Muncipal government, all authorities agree, is the black spot in America's civic and political life. In recent years there have been distinct gains in the efficiency of local governmental units, and with these gains has come a wholesome demand for a larger degree of self-government. This is as it should be. Likewise, there has been a too large delegation by the home to the school and to welfare agencies of the responsibility for the upbringing of children. There must be a re-establishment of the American home and a return to the home and family of a proper share of the responsibility and authority for the development and conservation of the child life of America. Due to the efforts of the pulpit and press, a back-to-the-home movement seems to be developing, which argues well for the future of the American family.

These two trends, indicating a return of responsibility and authority to the home and to local governmental units, are only phases of a single central tendency of the people to resume direct control themselves, to the fullest extent that this is feasible and economical. This movement is, after all, only a back-to-democracy movement, which will succeed only to the extent to which individuals, families, and local political units are able successfully to govern and control themselves within the wise and desirable limitations of a republican form of government.

Now, what bearing does this all have upon America's insistence upon a high school education? Just this: The responsibility has been placed upon the high school to develop first of all competent, loyal citizens, able and willing to govern them-

selves wisely, to discharge intelligently the responsibilities of family life, and to take each his full part in making his community a self-governed, well-governed political and social unit. If a high school education is the minimum preparation for a successful business or industrial career, how much more necessary is it for preparation for discharging successfully, the obligations of family, social and civic life? A high school education in this day and generation is not a luxury or a privilege, but a civic and social necessity for every normal adolescent girl and boy if America is to reach the full measure of the stature of the world's greatest and truest Democracy.

*What Governor Winthrop said three centuries ago is eternally true: "Concerning liberty, brethren, I observe a great mistake in the country about that. There is a two-fold liberty, natural and civil. The first is common to men with beasts; it is liberty to do evil as well as good. This liberty is incompatible and inconsistent with authority and can not endure the least restraint of the most just authority. The other kind of liberty I call *civil* in reference to political constitutions among men and *moral* in reference to the covenant between God and man in the moral laws. This liberty is the proper end and object of authority and cannot subsist without authority; it is liberty to do that only which is good, just and honest. This liberty you are to stand for with hazard not only for your goods but of your lives if need be."

This ideal of liberty within the limits of the civil and moral law must be made the guiding principle of high school administration and the permanent, positive possession of every high school pupil.

So much by way of a background of the philosophy of Democracy's high school. What are some of the problems, briefly, that confront us in Pennsylvania in the development of secondary education to the end that the high school may play its full part in the conservation of the State's most precious resources—its junior citizens?

*The first problem is to make a high school education available to every adolescent in Pennsylvania.*

*From Studies in Secondary Education II, University High School, Chicago.

With the great increases in high school enrollment in the past twenty-five years, some may believe that at last the high school has become the school for all adolescents as the elementary school has long since become the school for all childhood. The following table prepared by W. H. Bristow, giving the per cent in school and the per cent not in school for each age group from 13-19 in Pennsylvania according to the census report of 1920, shows how far short we are in Pennsylvania of enrolling in our high schools all girls and boys of high school age.

TABLE I

Number, Per cent in School and Per cent Not in School, each age group 13-19, in Pennsylvania according to the Census Report of 1920*

| *Age* | *Number* | *No. in School* | *Per cent in School* | *Per cent Not in School* |
|---|---|---|---|---|
| 13 | 162,702** | 155,381 | 95.5 | 4.5 |
| 14 | 159,349 | 139,431 | 87.5 | 12.5 |
| 15 | 145,122 | 102,892 | 70.9 | 29.1 |
| 16 | 161,582 | 64,210 | 39.8 | 60.2 |
| 17 | 147,669 | 37,065 | 25.1 | 74.9 |
| 18 | 146,621 | 22,873 | 15.6 | *84.4* |
| 19 | 142,089 | 14,351 | 10.1 | 89.9 |

Computing the "total number of each age group," we find that there were in Pennsylvania, according to the figures furnished by the 1920 Census Report, approximately 1,065,034 children of teen years of age. Of this number, 536,303 are reported as being in school, or approximately 54%. During that same year the high school enrollment was 148,000. Between the ages of fourteen and eighteen there were reported to be approximately 760,243. Only 366,571, or less than 50% of them, were reported as being in school.

If a high school education is a necessity in this twentieth century, how can it be made available and significant to an increasing number of girls and boys of high school age? Some of the social forces, industrial and economic, have been indicated above that are urging girls and boys into high school. What are some of the educational measures that are operating to attract girls and boys into high school and

*Pennsylvania Compendium, 14th Census, 1920, page 101.

**Computed from data, page 101, Pennsylvania Compendium.

keep them there after they are in? There is time, in the limits of this paper, to mention a few only without comment:

1. Existing courses and curricula must be enlarged and enriched to meet the needs of all pupils of high school age; in brief, all high schools vocationalized on a broad basis of preparation for efficient living—civic, social, and occupational, as rapidly as local resources and State aid permit. Society demands much more of its schools in an age in which it takes the farmer fifteen minutes to raise a bushel of wheat than it did in an age when it took three hours.

2. The Junior High School, wherever it has had a thorough trial under proper administrative conditions, through try-out courses has made higher forms of education desirable and has thus exerted a strong influence in holding girls and boys through the ninth grade and in increasing the number that enter the tenth grade.

3. The creation of a county-wide, co-ordinated system of junior and senior high schools will do much to ensure to country boys and girls educational advantages equivalent to those found in urban centers.

These measures constitute an ambitious program that seems visionary. Doubtless in some sections it is a twenty-five-year projection into the future. Yet it is a program enjoyed now by large numbers of our young people. Taxes for the support of high schools, paid by all the people, afford at present a high school education to only one-third of the girls and boys of high school age. Why not an inclusive high school program that will reach approximately all? Increased State aid; special State aid to districts of low valuation to enable them to equip their high schools properly, or better still, to pay tuition and, if necessary, transportation to larger centers; a larger unit of school administration and taxation—these are some of the important administrative measures that must be considered as ways and means towards reaching the goal of an adequate high school education for every adolescent in Pennsylvania.

*A second problem has to do with the possibilities and immediate needs of the small one, two, three and four-teacher high schools.*

It will be interesting to note at this point the favorable change in the status of the small high school as shown by the following table:

TABLE II

Distribution of High Schools by Grade

| *Year* | *Four Year* | *Three Year* | *Two Year* | *Total* |
|---|---|---|---|---|
| 1913 | 19% | 33% | 48% | 100% |
| 1925 | 57% | 23% | 20% | 100% |

In other words the problem of the small high school is gradually becoming less difficult by the process of natural growth and development. In the meantime, the problem of enriching and enlarging the program of studies in a small high school, particularly those that have but one or two teachers, is a difficult one. To include in such a high school all the desirable elements of a high school program is quite out of the question. Nevertheless, much can be done by way of an economical organization of the curriculum and of the daily time schedule of classes, which will provide a margin of time for at least a beginning of opportunity in such fields as Music, Art, Health, and Practical Arts. The employment of teachers in these special fields jointly by several adjoining districts will supply the trained instructor on a part-time basis in each district concerned.

While the ideal of a co-ordinated county-wide system of larger high schools should be kept constantly in mind as a goal to be reached as rapidly as local resources and sentiment and the development of our secondary system of highways permit, nevertheless, we must recognize that in many communities the small high school presents, and will continue to present, for years to come the only possible opportunity for higher education for many rural girls and boys. This fact means that we must make the small high schools in the meantime, as efficient as possible. The better we make the small high school, the more likely will the local community be to increase their support of it and strive to make it ultimately all that it ought to be.

The small high school, however, must not be encouraged to attempt to do more than it can do fairly well. It should be required

to do work of standard grade in whatever subjects or curricula it offers.

*A third problem is one that has to do with the placing of the classification of high schools upon a sound basis of professional supervision that will lead to a progressive improvement from year to year of the standards of secondary education throughout the state.*

The primary purpose of State classification of high schools is to raise the general level of the efficiency of high schools through enforcement of certain minimum standards and requirements relating to length of term, number of teachers, quality of instruction, character of equipment, and general tone of the school as evidenced by the scholastic achievements of the pupils and the co-operative spirit of the whole school community. However, as classification has incidentally provided a list of schools, the graduates of which are admitted on certificates to certain colleges, there has been and is a strong tendency to interpret classification as standardization in terms of college entrance requirements. As proof of the right of their schools to classification, principals and patrons frequently cite, as the most convincing argument they have to offer, the college records of their graduates.

Preparation to do college work well is certainly a function of the high school, nor can we censure too strongly a high school principal, particularly in a small community, if he exaggerates this function beyond its proper place. The most influential people in the community are usually those whose children are preparing for college; and moreover, academic subjects are cheap. The combination is a hard one to resist. Theoretically, the needs of the majority should be taken care of first, but this is not always a practical possibility even in a democracy. Frequently, too, the college preparatory group is the largest single homogeneous group in the school; the non-college pupils splitting up into a number of occupational groups whose needs are varied and difficult and expensive to meet. Of course, the only answer, ultimately, is the larger high school comprehensive enough in its offerings to meet the needs of all types of pupils and supported by a taxable area adequate to pay the cost.

The ideal that we are working towards is a system of classification that rates those schools highest which best meet the needs of all the various groups of young people of high school age in the community. Classification, then, will mean standardization in terms not of the requirements of colleges, but of the needs of all the clearly differentiated groups of young people of high school age in a given area.

There is much loose talk about the lowered standards of our high schools due to the admission of an increasing number of girls and boys of alleged lower intellectual ability. It would be surprising, indeed, if in this transition period when the high school is rapidly becoming a school for all adolescents standards did not become confused and uncertain. The remedy, however, lies not in a ruthless elimination of pupils in an effort "to maintain standards" as we say, but rather in a differentiation of courses and standards. In other words, the ultimate function of the high school is not selective, but distributive, that is, to help adolescents choose desirable lines of activity in which they can do well some part of the work of the world and at the same time find opportunities for maximum self-development. True growth is something more than increase in size or mere swelling. Biologically, growth involves not only cell-enlargement but cell division and differentiation. As Professor Farr points out in a stimulating article in the October *Atlantic* on The Philosophy of Growth, "And so with a university, growth involves, not simply bigger classes, but more classes; not simply bigger departments but more departments; not bigger athletes but more students."

The application of this philosophy of growth to high schools is obvious. Differentiation, not mere enlargement, is the criterion of growth. A sound philosophy of growth must, therefore, underlie any plan of classification, so as to stimulate and require, if need be, desirable differentiations.

Such a principle of classification requires supervision of the highest professional type on the part of county and district superintendents and their assistants. The elements involved are too complicated and

numerous to admit of close control or supervision from Harrisburg. The State Department can only point the way.

The supervision and, in particular, the approval and co-ordination of programs of studies of the high schools in his jurisdiction are functions of the office of the county or district superintendent. The functions of the Department of Public Instruction in the field of secondary education are to set up standards, typical, suggestive programs, and such other regulations and suggestions as will be helpful to county and district superintendents in the development and supervision of the high schools in their respective jurisdictions. Two new high school manuals have been prepared by the Department and will be ready for distribution early next calendar year, one of which will cover in detail the administration of the small Two-Year, Three-Year, Four-Year High School, the other, the adminsstration of the Three-Year and Four-Year Junior High School and the Six-Year Junior-Senior High School. These manuals will give type programs of studies, daily time schedules, qualitative and quantitative standards and other items which will be of help to high school principals and teachers responsible for the immediate organization and administration of high schools and of particular help to county superintendents in the supervision of high schools and in making up their recommendations relative to classification.

This co-operative method of high school classification which places the superintendent, particularly the county superintendent, in a position of larger responsibility for the supervision and growth of the high schools in his territory marks we believe a distinct step forward in secondary school administration in this Commonwealth, and should ensure the progressive development of twelve years of continuous public education "on ever richer and higher levels."

*The outstanding need of the public high schools, however, is for competent teachers.*

At the present time, the school laws interpret "competence" in terms of a minimum of two years of post high school work. It should be understood, however, that State requirements are expressed in terms of minimums which districts *must* meet but may exceed if they so desire.

We must address ourselves to the task of convincing the public that they must pay to have professionally trained teachers and all the other elements that go into the making of good schools, or pay the penalty of a lessened economic efficiency, a lowered social and intellectual tone in the community, and increased costs for juvenile delinquency and for crime generally.

There are some things in this world nations, communities, and individuals must pay the price to have, or pay the penalty for not having. Nations must pay for peace the price of sacrifice of selfish ambitions or pay the vastly greater cost of war. Communities must pay for social and physical well-being the price of maintaining wholesome, healthful living conditions or pay the greater cost of disease, ignorance, and crime. Individuals, particularly those who go into professional careers, must pay for success the price of adequate preparation and of unremitting toil or pay the penalty of loss of prestige and earning power. The question is not one of paying. We must pay the price of having, or the penalty of not having, the essentials of a sound and safe social order; but the penalty of not having falls most heavily upon the girls and boys who are the material out of which the America of the future must be made.

Finally, fellow workers, as we desire our communities and the State to pay the price of having a professionalized system of public education, let us first of all pay the price of preparation and of devotion to the great work of making this old world a better place for all.

Let us be ever on the alert to adapt our educational programs and policies to meet the developing needs of society, to the end that we may hasten the day when our nation will measure up to that high standard set by that great educator—statesman—the late Walter Hines Page:

*"The only acceptable measure of any civilization is the extent to which it improves the condition of the common citizen;

*From "The Life and Letters of Walter H. Page," Vol. I, page 71.

a few cultured and university trained men at the top; a few ancient families living in luxury; a few painters and poets and statesmen and generals; these things do not constitute a satisfactory state of society. The real test is the extent to which the masses participate in education, in the necessities and comforts of existence, and in equal opportunity, which is the basis of social progress."

## ALPHA-ALPHA CHAPTER

### The Development of Teaching Into a Profession

By E. A. Shiner

The first move towards a more adequate professional preparation of high school teachers was made at the N. E. A. in 1905. A committee of seventeen was appointed by Dr. E. W. Lyttle, president of the Secondary Department. This committee was composed of such eminent educators as Frederick E. Bolton, Straton D. Brooks, E. P. Cubberly, John R. Kirk, and M. V. O'Shea.

The report was published separately and entitled, "Report of the Committee of Seventeen on the Professional Preparation of High School Teachers." The Committee was representative of high schools, normal schools and colleges as well as post graduate departments of education. While there was no exact agreement on all points there was agreement on the views set forth in the report.

The Committee recommends:

1. Academic preparation—

(a) Detailed and specialized study of the subjects to be taught.

(b) One or more social science subjects to give social insight.

(c) Course in General Psychology.

2. Definite study be made of—

(a) History of Education.

(b) Educational Psychology.

(c) Principles of Education.

(d) Special methods in secondary school subjects.

(e) Organization and management.

(f) School hygiene.

3. Opportunity for observation and practice teaching with high school pupils—

(a) Maintenance of practice school.

(b) Affiliate with local public or private high school.

4. That the minimum requirement for a secondary school teacher be graduation from a college maintaining a four-year course and requiring four years work for admission.

5. That the study of professional subjects be distributed through the last two years of the college course.

This report is based on conditions that existed twenty years ago yet its recommendations have been realized in only a part of the states today. But it is astonishing to note that our schools of Education in our State Universities have adopted every one of the major recommendations for graduates who receive the B. S. degree in Education.

Progress in all the professions has been due to the fact that the professions themselves have determined what their standards shall be and what individuals shall be admitted. There can be only superficial standards when they must depend on legislation for enforcement.

The Gilds in the middle ages determined for themselves who should become members and set their standards so high that only the efficient could become members. There is a very present need of an agency to select and admit the properly qualified individuals to the teaching profession. This also implies the ability to keep out those who are not qualified.

It has long been conceded by educators that academic training is not enough for the prospective teacher. The science of education in this twentieth century has been reduced to a definite and accurate science by means of practical research. The school of education can perform no greater service than not only train candidates for the profession but also to weed out the unfit. No examination can reveal the

traits of character and personality which are so essential to the good teacher.

Traditionally there are four professions, law, theology, medicine and teaching. Education was the first profession; it should be the greatest. There are several recent recruits to the professions such as engineering, journalism and nursing. What then is the nature of the distinction between a profession and a trade or a business.

To be classed as a profession implies that work must call for greater responsibility, require greater skill, initiative, and a large capacity for co-operation. Every profession must conform to high standards of workmanship if it is to maintain itself as a profession. Public respect for a profession is not permanent; it must be earned.

There are four outstanding qualities of professional service: (1) It must be performed as a social service, (2) It requires expert knowledge, (3) It requires initiative and resources adequate to meet changing needs, (4) It requires an ethical co-operation.

Judged from the standpoint of social service, education stands today above many of the other so-called professions. The public will not long tolerate a profession that puts gain above service. There are those who see in law a profession that has ceased to be a profession because it has lost sight of its ideal of social service. The teaching profession falls short not in its ideals for social service but in its training for social service.

Perhaps the most serious fault of the teaching profession is that it does not render an expert service in the rank and file at least.

The worker in industry frequently repeats one mechanical operation day after day. He never meets a new situation in his work. Not so with the teacher. The problem of social adjustment is constantly changing. The teacher is the master of his machine, the school, unless he allows it to master him. He is the doctor in the many crises of childhood, pointing the way to intellectual and moral health. The teaching profession does not willingly accept the doctrine of changed methods and changed course of study. Many teachers are still prescribing latin and greek and geometry for a social order that requires social science and vocational training.

In the field of ethical co-operation the teaching profession as a whole has farthest to go. State and national organizations have only transitory purposes. Their chief function is certainly not ethical co-operation. They are places to make speeches, listen to speeches and argue. They do not contain all the members of the teaching profession yet they contain too many from the professional point of view.

How can a seventeen-year-old girl just out of high school with only a third grade county certificate be called a professional worker? Yet we admit her to our professional organizations on a par with the best teacher in the state. Can we expect to raise the standard of the profession by these organizations, when a majority of the members of our professional organizations would be thrown out of a job by so doing?

There is another group who have proved almost as valueless in developing teaching into a profession. That group is the college professors. While individuals from this group have contributed some of our best educational leaders, as a group they cannot agree. As a class they have probably reached the standard of a profession in the U. S. Yet they certainly fall short in ethical co-operation. There is no esprit d'corps, such as is found among doctors. Their code of ethics has found less expression at least. Personal and party politics still sway them. Jealousy on many faculties of our great schools is ill concealed.

Can we look to them for leadership in developing professional ethics? Individually yes; but collectively, no. They have too little to gain and much to lose by championing such a cause. Since neither the highest nor the least qualified can be expected to lead in developing the profession there is left only the secondary school teachers.

Many states and cities are leading the way by setting the standard for a license to teach at a college degree. Some cities have reached that standard for grade teachers. Here it seems we have a logical basis. A degree is not enough. It must be a degree in Education or its equivalent. Why

accept one as a member of the profession unless he has a life certificate and expects to make it his life work? Do other professions accept casual workers into their professional organizations? We do not license doctors or lawyers to practice for one year or two years. Why license teachers for one or two years? Why should there be anything less than a life certificate for teachers as there is now for lawyers and doctors?

The state Council of Education in California, adopted in April, 1924, a recommendation that the N. E. A. be memorialized with the following requests:

1. To make professional ethics a major factor in next year's work.

2. Appoint a committee to formulate a body of ethics.

3. Teach ethics in Normal Schools.

4. To set up machinery for the disbarment of unworthy members of the teaching profession.

5. Urge local associations to adopt similar programs.

The committee was appointed with Sarah T. Muir, of Lincoln, Nebraska, chairman. P. P. Claxton, superintendent of Tulsa, is a member of the committee. Nothing definite was accomplished in 1925, but there is promise for the future. At least there are indications that teachers everywhere are becoming more and more concerned with professional ethics and professional development.

## ALPHA-GAMMA CHAPTER

### Educational Progress as Conditioned by Educational Research

By O. C. Pratt

All progress is conditioned by research. Progress means an increasing control of the environment with a resulting increase in the elimination of chance from the affairs of men. Invariably such progress is the harvest of research.

The increasing control of germ diseases is the direct result of the researches of Pasteur and others. Tuberculosis has been cut down one-half in the last fifty years. Typhoid fever is approaching extinction. Diphtheria may be prevented by immunication. Deaths from scarlet fever have dropped in a half century from 91 per thousand to 4 per thousand. The great pestilences of former ages are under control.

Research is merely the application of the technique of scientific method to the solution of problems. In this technique four steps intervene between a problem and its solution. These four steps are diagnosis, hypothesis, deliberation and experimentation.

Diagnosis is the step by which the limits of the problem are determined. If one feels ill, he is aware of the feeling, but may not know at all what causes it. He calls in a physician who proceeds by various tests and the use of instruments to ascertain the exact cause of the illness and the precise extent of its inroads. Diagnosis is a complete comprehension of all the phases of the problem under consideration.

Hypothesis is the step by which the research worker seeks for an underlying principle or procedure by which the problem can be solved. When the mind dwells upon any problem various suggestions of a possible solution are apt to occur. In the step of hypothesis the research worker regards the problem from every angle looking for suggestions of a way out.

In the step of deliberation the research worker takes the garnered suggestions one by one and in imagination tries them out. The advantage of trying out a suggestion in imagination is that nothing is risked. The step, if not in the right direction, may be withdrawn. The function of deliberation is to select the one suggestion which seems to give the best promise of a solution.

The final and most important step in the technique of research is experimentation. This is the characteristic feature of modern scientific thinking. It was first formulated by Sir Francis Bacon, who himself died some 300 years ago trying out by

experimentation the efficacy of snow in preserving meat from putrefaction.

Experimentation has a technique of its own. The first step is the isolation of a single factor. The second step is to vary the amount of that factor as an element in a given situation. The third step is to measure accurately the effects of such variation and all the graphs, scopes and meters of modern science are instruments for more accurate measurement. The fourth step is the careful, logical, unbiased interpretation of the data.

This century has witnessed more and more with each passing year the application of this technique in the field of education. As a result education gives promise of becoming genuine human engineering.

It is impossible in the space available to do more than list a few of the more important developments as the result of research in education.

1. School surveys are the result of the application of the science of statistics to educational materials.

2. The recognition of the problem of retardation and its partial solution since the publication of Ayres' Laggards in our Schools.

3. The marking of pupils has been reduced to an objective basis since the numerous investigations in this field showed the very large element of error in teachers' subjective marks.

4. The multiplication of standardized tests results from the application of this technique to examinations.

5. Intelligence tests similarly are the product of a scientific, objective approach to the measurement of intelligence.

6. The organization of classes for overage or gifted children and so-called "special" and "opportunity" classes, grew out of the realization of the wide range of ability among children resulting from accurate measurement of such abilities.

7. The "informal tests" so increasingly numerous recently are the product of the technique of research applied to ordinary school tests.

8. Courses of study are being organized so as to make provision for "minimum essentials" and supplementary material because of the need which research made evident.

9. Building surveys are taking the place of former hit or miss methods in determining building programs.

10. The individualization of instruction is growing because research showed the need for it.

11. Remedial teaching is beginning to take the place of the haphazard variety that did not aim at any specific object.

In the light of the extremely rapid advance being made in education as an outcome of research it may safely be predicted that educational practice will be completely revolutionized within the next quarter century.

## ALPHA-ZETA CHAPTER

### Thirty Years of Research in Science and Educational Problems Arising Therefrom

By Frank Mann Life

Having passed through a period of little less than thirty years of scientific progress and at all times striving more or less successfully to keep abreast of the times, I have at first hand watched, sometimes with marvelous anxiety, the astounding developments of this period.

It was in 1895 that I assisted Joseph P. Naylor, then head of the department of Physics in DePauw University, in making an X-ray picture of a fish in which the fish's skeleton was revealed. This is only mentioned because it calls to mind one of four great discoveries and achievements which have ushered in the greatest thirty year period in the history of science. It was in 1895 that Roentgen announced his discovery of the X-ray. Previous to this time much had been said about the horizontal and transverse components of all wave motion and when the X-ray was discovered it was immediately proposed that

the horizontal component of ordinary light, although not visible to the eye, had been rendered capable of exciting certain substances whose magic influence had the power of converting these longitudinal waves into transverse waves. This explanation of the X-ray was, however, soon abandoned.

In the same year, 1895, Perrin announced that the Cathode ray, which gives origin to the X or Roentgen ray, consists of negatively charged particles. Perrin reached this conclusion from the fact that the cathode ray could be deflected by superposing upon it a magnetic field. Sir J. J. Thomson followed this up with an endeavor to secure a deflection of the cathode ray by superposing upon it an electrostatic field. He in 1897 was successful and proved beyond doubt that the cathode ray is composed of electrified particles.

Meantime Becquerel, who was much interested in Roentgen's announcement of the X-ray, was busily engaged in investigating such substances as produced distinct glows when brought near certain other substances, thus simulating the X-ray. It was in these investigations that he was enabled to announce the discovery of radioactive matter, in 1896, but one year after Roentgen's discovery.

The experiments which Perrin and Thomson had been performing with a view to determining the nature of the cathode ray were being supplemented by Townsend and Wilson in an endeavor to isolate the charged particles which they were now convinced constituted this ray. Even before 1900 they had been successful in their undertaking but were not satisfied with the measurements thereof which they were enabled to make. By 1904 and 5, however, they had completed a series of measurements of the velocity, mass and charge carried by the elemental particle of the cathode ray, in which measurements considerable confidence was expressed.

About this time Robert A. Millikan came on the scene and in 1906 began experiments which he continued until 1909 when he published measurements made upon the elemental negative particle which we shall designate as the "electron," which measurements have not thus far been improved upon or revised.

It would of course be folly to accredit the discovery of the X-ray and radioactivity to Roentgen and Becqueral for were it not for their predecessors, Crooks, Hertz and others, their accomplishments would not have been realized. Nor would Thomson and Millikan have isolated the electron, but for *their* forerunners.

Quite as important for advancement in research activity is the other function of the Crook's tube, that of a thermionic tube. In this capacity since about 1914, the vacuum tube has made possible much research, otherwise impossible. The action of the thermionic vacuum tube in rendering sensitive, and useful, currents of such feeble manifestation as to, otherwise, be wholly unknown, has not only been a stimulus to research but has given us the use of the highways of the sky for wireless communication.

Upon the X-ray, radio-activity, isolation of the electron and the vacuum tube is building an epoch in science that is so far-reaching as to touch practically every natural science and in many of these sciences furnish an entirely new basis on which to build. It has been shown, beyond dispute, at present at least, that in the electron is the elemental unit of both matter and electricity. We are not so sure but that we are about to believe that electrification and motion are the components of which matter is made and that the principles of conservation of matter and conservation of energy are fused into one principle—the conservation of energy.

While we for some time have held the notion that all matter exists in molecular form and that molecules are made of atoms, we are now as strongly convinced of the existence of the electron—about one two-thousandth the mass of the smallest atom—and that it is an essential constituent of any atom. The molecule we have never seen and have no reason for hoping to see. Much less shall we expect to see the atom. Yet we are as firmly convinced of the existence of the electron as are we of either the molecule or the atom. In fact, the electron

manifests itself to us in ways that we can never hope the molecule and atom shall.

We perceive in every atom a simulation to a solar system which gives evidence of being held together by electrical forces. The electrons which bear the smaller part of the atom's mass are no more important than the central positive portion. Thus far, however, this central nucleus does not yield to investigation as does its negative complement.

The import of this new notion of the composition and structure of the atom is far-reaching. Not only does it lead us into a conception of the relation of matter and electricity but it affords a basis upon which to found a notion of valence, atomic weight and chemical affinity upon which the science of chemistry is builded and it affords a rational explanation of paramagnetism and diamagnetism, various electrical phenomena such as electromotive force, electrical conduction, and establishes the Maxwellian hypothesis that light is an electrical phenomenon arising from the atom.

The field of research need not be an uninviting one to the ambitious man who has an inclination therefor. The percentage of successes among scientists is very high. Perhaps the reason is that no one becomes a scientist except by choice, and one succeeds in proportion to the fascination which his occupation affords. If success means "putting across" the thing undertaken, the scientist of recent years has a major share. To know and understand the universe is the curiosity of a productive research worker. The mind imbued with the idea that science is the soul of prosperity and the militant source of all progress has an ideal that holds production ever in sight. The utilitarian appeal of science, it is hoped, shall never become the chief influence impelling the scientist.

True, the discoveries of science have presented practically all that, in a temporal way in these modern days, we hold as essential to our comfort and happiness. Consider who is really responsible for the telephone, electric light, automobile, wireless telegraph, wireless telephone, photo-telegraphy, insulin and other chemical requisites of modern life, a knowledge of colloidal phenomena, germicides, insecticides and even the doubling of the period of man's career on earth. To the scientist belongs all the praise. But he is not inviting emoluments or praise, for his is the satisfaction of having extended the arm of service to his fellowman. More than a comfortable living, abundant equipment with which to work, and sufficient support for the care and education of his family would be a real manacle on the true scientist and a barrier to his greatest efficiency and his greatest pleasure.

The X-ray, radioactivity, the electron and the thermionic vacuum tube have conspired in bringing forward a flood of research in an endeavor to discover fundamental truth. This is necessarily bringing a new and more fundamental insight into most of the sciences thus affected. The colleges can more easily adapt to the new regime than can the secondary schools.

Our children are entitled to the best in books, methods and instruction. Methods and instruction are subject to adjustment through college training, but books, owing to their commercial or economic bearing, are more difficult of adjustment. A prominent professor of physics in an Eastern College in a recent article bewails the dearth of competent texts in elementary science. Attention is called to the fact that the organization of the matter is the same as a quarter of a century ago. To be sure, revised editions will have a few pages at the last of the book giving something of recent developments in that particular science, leaving the student with the impression that these so-called epoch-making discoveries and developments in that science are only to be whispered about and not incorporated as the fundamental truth on which the science is now really based. This professor's feeling in the matter is shared by many another scientist who is really interested in preparing a generation whose secondary training is abreast of the advanced thought and discovery of its time and is imbued with the possibility of unlimited fruitful research.

Up to about thirty years ago, the prevailing notion of an author getting out a

text in Physics—and a similar statement might be made of the Chemical science—was to arrange the material of the science in a logical and sequential order so that the accumulated knowledge on that subject could be understood, but without conveying a ray of hope of adding one "jot or tittle" thereto. Since that time, however, the spirit of research has been kindled and no longer is one in possession of the knowledge of the past content therewith. Fields of unlearned truth are every day opening to the one who puts himself in possession of the truth as it is known at present and uses this as a basis from which to think. But in respect to the secondary school texts and to a large extent the curriculum, they remain much as they were before this new era dawned.

Inasmuch as the speaker is at present in charge of a class in the "Teaching of Physics," in order that a study might be made of the available texts and laboratory manuals in this science, a number of publishers of secondary text books were addressed with a view to securing copies of their publications in this subject. Their replies were most courteous and in every case they were prompt in responding with copies of their publications when they felt that such publications really met the demand of the present time. The sad part of it, however, was that more than forty per cent of the replies were of a type like this from which I quote: "I am afraid you have approached us on one of our weak sides." "We publish no physics text that quite meets the demands of today."

The explanation of this situation lies somewhere. The fault lies someplace and must be remedied. It is up to those interested in so-called "Education" to ferret out and remedy the error into which our secondary education has fallen. If our research producers are to blame for lack of interest in presenting in a methodical and psychological manner the results of their research, the fault may not be wholly theirs. If the manner of choosing secondary school text books need scrutiny, or if in the last analysis the responsibility should be placed on the school administration, then let the axe fall where it should.

There is no reason worth considering why the youth of our land should wait thirty to fifty years to have made known to them the truth which all who know of it and reason therewith are compelled to accept without delay. If the secondary schools of our country are placed and kept abreast of the most advanced thinking, the sky itself does not mark the bounds of the contribution which we shall be able to make the civilization of the future and the advancement of mankind. The millenium will not be ushered in until man's thought and power to think become the thought and power to think of Him, who implanted that upon which all thought is based.

## ALPHA-ETA CHAPTER

### The Futility of Education for Conformity

By Charles A. Coulomb

In most parts of our country we have had free public education for several generations at least. Millions of dollars, and the skill and energy of hundreds of thousands of trained people are spent in trying to teach the new generation, what? To think or to conform?

As a result of education to date we are regaled with spectacles like the recent affair at Dayton, Tennessee. We read of six thousand people in a town in Iowa, each writing a designated verse from the Bible on a sheet of paper of a given size and signing his or her name. These sheets are to be gathered together and bound in a sumptuous book. What could these people do that would be more futile in a moral or religious way than to make this gesture? To come nearer home, we read in our own Philadelphia papers of universal objection to transportation costs and conditions, but day before yesterday, the vote showed a considerable blindness to effective means of correction. There are said to be over

a million laws that we are supposed to obey, almost all of which aim to regulate our conduct, not as it relates to our social contacts, but as it relates to our own personal life, and which aim at producing a standard type of behavior. Our Mayor a few days ago approved a scheme for the uniform display of the flag on days of national festivals or commemorations. No doubt, as Dr. Hays has pointed out, non-conformity will be followed by inquisition and punishment, all the more severe because it is social rather than legal. Recently, a man in the West was sent to jail for 250 days because he used an old flag to wipe his store window. His plea of ignorance of the law only aggravated his offence. One is reminded of the middle age penalties for dishonoring the consecrated wafer, or using disrespectfully the sacred furnishings of the altar.

Education is defined as the producing of desirable changes in individuals. Can we think of the educational effects of such constraining laws or customs as being desirable? Is not the desirable change one which will enable the individual to be a better member of that society in which he proposes to live? Who can tell what society will be like a generation hence? True there are some permanent things, some fundamental human traits that will still be with us. But is not the need a training in adaptability rather than a training in conformity?

Scientists and archeologists are constantly turning up additional evidences of vanished civilization which often indicate a life as elaborate as our own, if mechanical invention be excluded. Count Prohak at Carthage, the National Geographic Society in Yucatan, the University of Pennsylvania in the fatherland of Abraham, the late Lord Carnavon in Egypt, and so on. Why did these civilizations perish? The unanimous opinion is that certain world conditions changed (not necessarily physiographic, though that is probably an important type of change), and that the members of these civilizations failed in adapting themselves to the new conditions. The more complicated a machine or a civilization the less useful or adaptable it will be under different circumstances of use or environment.

Our civilization is becoming more and more complex. Dr. Robinson in his "Mind in the Making" points out that our knowledge has increased thousands of fold in the last twenty-five centuries, but that our intellectual means of dealing with this new knowledge has hardly increased at all, if indeed it has not deteriorated. We have in some measure adapted our lives to new invention and discovery, even though the list of those who have not learned how to dodge automobiles is still very great. Our thoughts, however, not only tend of themselves to follow old paths, but are even forced to stay in such paths by law.

Are we not by this means, by narrowed teaching in our schools, by a narrow nationalism (not patriotism) fostered by certain groups of our people, the public prints, and by an inborn fear of being an outcast from the tribe, endangering our civilization? If history repeats itself, and I believe, within limits, that it does, are we not headed straight for the destruction of our present social structure to give place to one that is more adapted to the world in which our descendants, if any may be left, will have to live?

If we go back through history and examine those periods which have been characterized by a spiritual rather than a material advancement of civilization, we will notice that they all have at least one common characteristic. They were all periods of intellectual and social freedom. They were periods in which people not only thought as they liked but, again within limits, did as they liked. There may have been laws governing personal conduct and even social contacts but they were not seriously enforced.

The plays of the Greeks picture for us such a social organization in Athens as movie directors could not imagine nor would even the Follies dare to stage it. The time of the earlier emperors in Rome was similarly a time of literary and artistic achievement that rivalled that of Athens in its prime, and yet Suetoniurs, Apuleius, and other writers of that period indicate a personal freedom of thought and conduct

that was not interfered with by either law or opinion. The Arab civilizations in Spain and in the East, the little Renaissance in Provence, the Renaissance in Italy, the period of Elizabeth in England, and of Louise XIV in France, are all examples of a period of almost complete liberty of thought and of conduct, whatever may have been the law, either ecclesiastical or civil. As a matter of fact, offenses against society as a whole were generally severely punished, but Benevenuto Cellini could cynically say in his autobiography anent the stabbing of one who had offended him, "I think that was my twenty-third."

I am not sure that I would be willing to sponsor so great a freedom of conduct as the last sentence would indicate, but it seems to me true that those periods in any country, marked by tolerance of thought and conduct are those periods marked by intellectual advances in all fields of spiritual accomplishments, and that periods of reaction, conformity to standard, and complete adjustment to existing conditions are barren of intellectual achievement.

I respectfully submit to you for your consideration the theses that the school teacher should be a radical in the sense that he should, like the Athenians of old, be eager to learn about some new thing, unless this splendid material civilization of ours is to perish for lack of intellectual support. And secondly, that we should resist with all our power any plan which obligates us to put over to our pupils, teachings, no matter under what disguise they may be presented, that have for their object a perfect adaptation of the pupils to what I believe is today a somewhat rotten world. Do not teach your pupils to conform, but teach them to think and to choose.

THE FACT that you receive this copy of the magazine is prima facie evidence that your dues for the seventeenth fiscal year have been paid into the office of the National Secretary. Your dues for the eighteenth fiscal year are now due and payable, and if you have not already remitted them to your chapter secretary, please assist him by sending them to him at once before he asks you for them even the first time.

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# Our Successors

WE own this United States of ours, and soon, painfully soon, we all shall have completely stepped out from its management—from our personal affairs as well as from those of greater importance. We shall be gone, our only influence that which survives after we are dead.

Stop and think for a moment: Not one single brain of all those directing human activities today will be here in a few years.

But there is one saving factor. We know we are going; we know who are to step into our places; we can, if we will, prepare them to achieve far beyond what we are doing.

Can we afford to? We can't afford not to.

Will it pay? Yes, a thousand times. Yes, even in our own lifetime, when the initiates are only getting ready; but in the future, to civilization, to the human race, who shall measure what it means? While against it there stands only an unwillingness to meet the issue, a weak postponement of action, or a "penny wise and pound foolish" policy that we should have outgrown long ago.

Let us throw off our lethargy and demand a practical, constructive improvement in educational opportunity that will rapidly bring about a condition where all the children of all the people will be able to have the best education that experts can plan.

—*Eugene Randolph Smith.*